WATER SUPPLY OUTLOOK
and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS
for
MONTANA

UNITED STATES DEPARTMENT of AGRICULTURE···SOIL CONSERVATION SERVICE,
and
MONTANA AGRICULTURAL EXPERIMENT STATION

Data included in this report were obtained by the agencies named above in cooperation with Federal, State and private organizations listed on the last page of this report

AS OF
JAN. 1, 1963

UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

To Recipients of Water Supply Outlook Reports:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, so does the runoff of the streams. The best seasonal management of variable western water supplies results from advance estimates of the streamflow.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, up to 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1400 western snow courses are measured each year. These measurements furnish the key data for water supply forecasts.

Streamflow forecasts are obtained by a comparison of total or maximum snow accumulation, as measured by snow water equivalent, to the subsequent spring and summer or snowmelt season runoff over a period of years. The snow water equivalent measured in selected snow courses provides most of the index to the streamflow forecast for the following season. More accurate forecasts are usually obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast procedure. Early season forecasts assume average climatic conditions through the snowmelt season.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions. Soil Conservation Service Reports may be secured from Water Supply Forecasting Unit, Soil Conservation Service, P.O. Box 4170, Portland 8, Oregon.

PUBLISHED BY SOIL CONSERVATION SERVICE

REPORTS	ISSUED	LOCATION	COOPERATING WITH
RIVER BASINS			
WESTERN UNITED STATES	MONTHLY (FEB.-MAY)	PORTLAND, OREGON	ALL COOPERATORS
STATES			
ALASKA	MONTHLY (MAR.-MAY)	PALMER, ALASKA	ALASKA S.C.D.
ARIZONA	SEMI-MONTHLY (JAN.15 - APR.1)	PHOENIX, ARIZONA	SALT R. VALLEY WATER USERS ASSOC. ARIZ. AGR. EXP. STATION
COLORADO AND NEW MEXICO	MONTHLY (FEB.-MAY)	FORT COLLINS, COLORADO	COLO. STATE UNIVERSITY COLO. STATE ENGINEER N. MEX. STATE ENGINEER
IDAHO	MONTHLY (JAN.-JUNE)	BOISE, IDAHO	IDAHO STATE RECLAMATION ENGINEER
MONTANA	MONTHLY (JAN.-JUNE)	BOZEMAN, MONTANA	MONT. AGR. EXP. STATION
NEVADA	MONTHLY (JAN.-MAY)	RENO, NEVADA	NEVADA DEPT. OF CONSERVATION AND NATURAL RESOURCES - DIVISION OF WATER RESOURCES
OREGON	MONTHLY (JAN.-JUNE)	PORTLAND, OREGON	OREG. STATE UNIVERSITY OREGON STATE ENGINEER
UTAH	MONTHLY (JAN.-JUNE)	SALT LAKE CITY, UTAH	UTAH STATE ENGINEER
WASHINGTON	MONTHLY (FEB.-JUNE)	SPOKANE, WASHINGTON	WN. STATE DEPT. OF CONSERVATION
WYOMING	MONTHLY (FEB.-JUNE)	CASPER, WYOMING	WYOMING STATE ENGINEER

PUBLISHED BY OTHER AGENCIES

REPORTS	ISSUED	AGENCY
BRITISH COLUMBIA	MONTHLY (FEB.-JUNE)	WATER RIGHTS BR., DEPT. OF LANDS, FORESTS AND NATURAL RESOURCES, PARLIAMENT BLDG., VICTORIA, B.C., CANADA
CALIFORNIA	MONTHLY (FEB.-MAY)	CALIF. DEPT. OF WATER RESOURCES, P.O. BOX 388, SACRAMENTO, CALIF.

WATER SUPPLY OUTLOOK

FEDERAL-STATE-PRIVATE COOPERATIVE SNOW SURVEYS

for

MONTANA

Report Prepared
By

P. E. Farnes
Acting Snow Survey Supervisor

Soil Conservation Service
Snow Survey Section
Box 855, Bozeman, Montana

Issued By

H. D. Hurd
State Conservationist
Soil Conservation Service
Bozeman, Montana

J. A. Asleson
Director
Montana Agricultural
Experiment Station
Bozeman, Montana

TABLE OF CONTENTS

	Page
WATER SUPPLY OUTLOOK	1
SNOW COURSE MAP	2
SOIL MOISTURE	3-9
SNOW SURVEY DATA	10-11
RESERVOIR STORAGE	12
LIST OF COOPERATORS	Inside Back Cover

MONTANA
WATER SUPPLY OUTLOOK
as of
January 1, 1963

```
* * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                   *
* The water supply outlook for the coming irrigation *
* season is Poor.  Snow surveys made near the first  *
* of January indicate the mountain snow pack is much *
* below average.  Below average streamflow can be    *
* expected next spring and summer unless precipita-  *
* tion in the next three months is 120 to 150 per-   *
* cent above average.                                *
*                                                   *
* * * * * * * * * * * * * * * * * * * * * * * * * * *
```

Snow surveys made near the first of January in the Flathead River basin indicate the water stored in the snow pack is 36 percent of last year and 50 percent of the 1943-57 average.

In the Clark Fork River drainage the snow pack water content is 38 percent of last year and 53 percent average.

One snow course, Gibbons Pass, measured in the Bitterroot drainage is 73 percent of last year and 64 percent average.

East of the Continental divide the snow water content on the headwaters of the Missouri River is 40 percent of last year and 52 percent average.

Four snow courses measured on the Main Stem of the Missouri River have a water content that is 52 percent of last year and 52 percent average.

In the Yellowstone River headwaters the snow pack is 46 percent of last year and 61 percent average.

Mountain soil moisture is generally near or above average for this time of year with the exception of extreme northern portion of the State where below average conditions exist. Mild fall weather and generally near average fall precipitation have increased moisture content of the mountain soils, offsetting somewhat the low snow pack.

Storage in irrigation reservoirs is generally near average with the exception of the Sun, Marias, Teton and Milk River drainages where storage is slightly below average.

Storage in power reservoirs is generally near or above average.

SNOW SURVEY COURSES
AND SOIL MOISTURE STATIONS
IN
MONTANA
LEGEND
TOWNS AND CITIES
13D4 SNOW SURVEY COURSE
13D4M SOIL MOISTURE STATION
DRAINAGE BOUNDARIES
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE
BOZEMAN MONTANA
SCALE IN MILES
50 25 0 50 100
REVISED 12-62
5,R-11,484
KOOTENAI
ST. MARY
MILK
MARIAS
MILK
FLATHEAD
TETON
SUN
MAIN STEM
BLACKFOOT
MISSOURI
JUDITH
MUSSELSHELL
LOWER YELLOWSTONE
BITTERROOT
CLARK FORK
BIG HOLE
JEFFERSON
GALLATIN
UPPER YELLOWSTONE
BEAVERHEAD
RUBY
MADISON
IDAHO
SOUTH DAKOTA
MONTANA
WYOMING
LIBBY
KALISPELL
COLUMBIA FALLS
CHERON
THOMPSON FALLS
POLSON
PLAINS
ST REGIS
SHELBY
CHOTEAU
AUGUSTA
GREAT FALLS
HAVRE
GLASGOW
FORT PECK RESERVOIR
OVANDO
MISSOULA
HELENA
LEWISTOWN
HARLOWTON
HAMILTON
DARBY
ANACONDA
BUTTE
WILSALL
BOZEMAN
BILLINGS
LIVINGSTON
DILLON
GORWIN SPRINGS
RED LODGE
BILES CITY

INDEX TO MONTANA SNOW COURSES AND SOIL MOISTURE STATIONS

INDEX TO MONTANA SNOW COURSES AND SOIL MOISTURE STATIONS

Drainage Basin & Course Name	Number	Elev.	Location Sec. Lat.	Twp.	Range Long.	Record Began	Measuring Dates 1/	Measured By 2/
COLUMBIA RIVER BASIN								
KOOTENAI RIVER								
Beree Creek	15B11	5500	6	25N	30W	1937	4,5,$\frac{5}{6}$	2
Brush Creek	14A4	5000	13	30N	26W	1937	3,4,5	1,2
Red Mountain	15A1	6000	4	36N	29W	1937	3,4,5,$\frac{5}{6}$,6	1,2
Weasel Divide	14A7	5450	8	37N	24W	1937	3,4,5,$\frac{5}{6}$,6	1,2
FLATHEAD RIVER								
Basin Creek	13B14A	5000	11	19N	12W	1951	2,3,4,5	1
Bassoo Peak	14B3	5150	11	24N	25W	1960	3,4,5	1,5
Big Creek	13B3	6750	7	22N	18W	1941	3,4,5 6	1,5
Camp Misery	13A17	6400	30	28N	18W	1962	3,4,5	1,2
Desert Mountain	13A2	5600	24	31N	19W	1937	1,2,3,4,5 6	1,2
Patty Creek	13B4	5500	4	22N	18W	1962	3,4,5, 6	1,5
Griffin Creek Divide	14A9	5150	11	28N	25W	1960	3,4,5	1,5
Hell Roaring Divide	14A3	5770	35	32N	22W	1942	3,4,5,$\frac{5}{6}$,6	1
Holbrook	13B13A	4530	18	21N	13W	1951	2,3,4,5	1
Kishenehn	14A6	3886	14	37N	22W	1954	3,4	6
Logan Creek	14A5	4300	34	30N	24W	1937	3,4,5	1,2
Marias Pass	13A5	5250	34	30N	14W	1934	1,2,3,4,5	3
Mineral Creek	13A16	4000	29	35N	17W	1939	3,4	6
North Fork Jocko	13B7	6330	3	17N	17W	1941	3,4,5,$\frac{5}{6}$,6	1,5
Quintonkon	13A13	3800	11	26N	17W	1951	4	1,2
Spotted Bear Mt.	13B2	7000	23	25N	15W	1948	1,2,3,4,5	1,2
Strawberry Lake	13A10	6500	11	28N	19W	1948	3,4,5	1
Trinkus Lake	13B1	6500	9	25N	17W	1948	3,4,5	1
Trout Lake	13A12	3600	21	28N	17W	1948	1,2,3,4,5	1,2
Twin Creeks	13B11	3580	14	26N	16W	1951	3,4,5	1,2
Upper Holland Lake	13B5	7000	28	20N	16W	1948	3,4,5	1
CLARK FORK RIVER								
Black Pine	13C13	7100	23	8N	15W	1959	3,4,5	1
Copper Creek	12B10	5700	1	15N	9W	1962	3,4	1
Cotter Mine	12B11	6250	2	15N	9W	1962	3,4	1
Coyote Hill	13B10	4200	12	18N	16W	1947	1,2,3,4,5	1,2
El Dorado Mine	13C9	7800	23	8N	14W	1949	3,4	1
Fred Burr Pass	13C11	8000	12	6N	13W	1957	3,4,5	1
Gold Creek Lake	13C10	7200	14	8N	12W	1949	3,4	1
Hoodoo Creek	15C1	6200	9	14N	27W	1937	3,4,5	1,2
Intergaard	13C4	6450	6	5N	13W	1936	2,3,4	4
Lubrecht Forest #6	13C8	4040	11	13N	14W	1951	1,2,3,4,5	8
Red Lion	13C12	7000	27	6N	13W	1958	3,4,5	1
Skalkaho Summit	13C3	7259	30	6N	17W	1937	3,4,5,$\frac{5}{6}$,6	1
Slide Rock Mt.	13C2	7100	35	10N	16W	1937	3,4,5	1
Southern Cross	13C5	6500	8	5N	13W	1936	2,3,4	4
Storm Lake	13C7	7780	19	4N	13W	1939	1,2,3,4,5	1
Stuart Mill	13C6	6500	19	5N	13W	1936	2,3,4	4
T.V. Mountain	14B1	6800	33	15N	19W	1956	1,2,3,4,5	1
BITTERROOT RIVER								
Ambrose	13C16	6475	28	9N	18W	1960	3,4,5	1
East Fork R.S.	13D1	5400	16	2N	17W	1937	3,4	1
Gibbons Pass	13D2	7100	4	2S	19W	1934	1,2,3,4,5,$\frac{5}{6}$,6	1,3
Lost Horse	14C7	5940	5	4N	23W	1960	3,4,5	1
Nez Perce Camp	14D2	5580	19	1S	23W	1937	3,4,5	1
Nez Perce Pass	14D1	6575	25	1S	24W	1937	3,4,5	1
Twin Lakes	14C8	6510	32	5N	23W	1960	3,4,5	1
SASKATCHEWAN RIVER BASIN								
ST. MARY RIVER								
Iceberg Lake #3	13A3	5600	34	36N	16W	1922	5	3,9
Josephine Lower #9	13A14	4900	10	35N	16W	1955	5	3,9
Mount Allen #7	13A7	5700	22	35N	16W	1922	5	3,9
Piegan Pass #6	13A6	5500	15	35N	16W	1922	5	3,9
Ptarmigan #8	13A8	5800	32	36N	16W	1937	5	3,9
MISSOURI RIVER BASIN								
BEAVERHEAD RIVER								
Bloody Dick	13D10	7600	12	8S	16W	1948	3,4	1
Carter Creek	12D4	7400	22	8S	7W	1963	3,4	1
Gold Stone	13D9	8100	11	8S	16W	1948	3,4	1
Lakeview Canyon	11E4	6930	26	14S	2W	1948	3,4,5	10
Lakeview Ridge	11E3	7400	27	14S	2W	1948	3,4,5	10
Lemhi Pass	13E1	7480	9	10S	15W	1948	3,4	1
Trail Creek	13E2	7090	15	10S	15W	1948	3,4	1
White Pine Ridge	12E1	8850	18	14S	9W	1948	3,4,5	1
RUBY RIVER								
Clover Meadow	11D8	8600	28	9S	2W	1963	3,4,5	1
Divide	12B7	7900	14	12S	4W	1963	3,4,5	1
Notch	12B6	8500	18	1S	4W	1963	3,4,5	1
BIG HOLE RIVER								
Abundance Lake	13D20	8800	7	3S	12W	1963	3,4,5	1
Darkhorse Lake	13D19	8600	4	8S	16W	1963	3,4,5	1
Elk Horn Springs	13D15	8000	15	4S	12W	1935	3,4,5	3
Foolhen	13D21	8500	14	1S	13W	1963	3,4,5	1
Jahnke Creek	13D8	7340	25	7S	16W	1948	3,4	1
JEFFERSON RIVER								
Berry Meadow	12C7	7300	17	5N	5W	1962	3,4	1
Picnic Grounds	12C6	6500	10	5N	6W	1941	2,3,4	4
Pipestone Pass	12D1	7200	10	1N	7W	1938	1,2,3,4,5	1

2/Missouri River Basin cont'd

Drainage Basin & Course Name	Number	Elev.	Location Sec. Lat.	Twp.	Range Long.	Record Began	Measuring Dates 1/	Measured By 2/
MADISON RIVER								
Call Road	11D7	8050	21	8S	2W	1962	3,4,5	1
Crockett Lake	11D6	8400	20	8S	2W	1962	3,4,5	1
Hebgen Dam	11E5	6550	22	11S	3E	1934	1,2,3,4,5	3
Jack Creek	11D5	6800	13	6S	1E	1961	3,4	1
North Meadow	11D3	7500	23	3S	3W	1961	3,4	1
West Yellowstone	11E7	6700	34	13S	5W	1934	1,2,3,4,5	3
GALLATIN RIVER								
Devil's Slide	10D4	8100	14	5S	6E	1935	2,3,4,5, 6	1
Hood Meadow	10D3	6600	22	4S	6E	1935	2,3,4,5	1
New World	10D1	6700	24	3S	6E	1939	2,3,4	1
Twenty-One Mile	11E6	7150	1	11S	5E	1934	1,2,3,4,5	3
MISSOURI RIVER MAIN STEM								
Chessman Reservoir	12C5	6200	2	8N	5W	1936	1,2,3,4,5	3
Crystal Lake	9C1	6100	19	12N	18E	1941	3,4	1
Elk Peak	10C7	8000	10	8N	8E	1963	3,4	1
Grasshopper	10C2	7000	19	9N	8E	1938	3,4	1
Kings Hill	10C1	7500	35	13N	7E	1934	3,4,5	3
Rocky Boy	9A1	5200	15	28N	16E	1941	3,4	7
Stemple Pass	12C1	6900	16	13N	7W	1934	3,4,5	3
Ten Mile Creek L.	12C2	6250	13	8N	6W	1935	1,2,3,4,5	3
Ten Mile Creek M.	12C3	6800	13	8N	6W	1934	1,2,3,4,5	3
Ten Mile Creek U.	12C4	8000	19	8N	5W	1935	1,2,3,4,5	3
SUN-TETON-MARIAS RIVERS								
Benchmark	12B8	5500	9	20N	10W	1948	3,4	1
Cabin Creek	12B6	5400	33	23N	10W	1949	3,4	1
Five-Ball	12B9	5600	36	20N	10W	1948	3,4	1
Freight Creek	12A1	6000	13	26N	10W	1948	3,4	1
Gates Park	12B5	5300	31	24N	10W	1949	3,4	1
Goat Mountain	12B7	7000	20	22N	10W	1934	3,4,5	3
Walcron Creek	12B2	5600	16	25N	9W	1948	3,4	1
West Fork	12B1	6000	6	25N	9W	1948	3,4	1
Wrong Creek	12B4	5700	32	25N	10W	1949	3,4	1
Wrong Ridge	12B3	6800	17	25N	10W	1949	3,4	1
JUDITH RIVER								
Spur Park	10C6	8000	20	12N	9E	1963	3,4	1
UPPER YELLOWSTONE RIVER								
Bald Ridge	10C5	7500	11	4N	10E	1961	3,4	1
Camp Senia	9D1	7890	2	8S	18E	1937	3,4,5	1
Cooke City	10D7	7400	25	9S	14E	1937	1,2,3,4,5	6
Crevice Mt.	10D5	8400	22	9S	9E	1935	3,4	2
Gertrude Lake	9D3	9250	10	8S	18E	1961	3,4,5	1
Grizzly Peak	9D5	8400	26	7S	19E	1963	1,2,3,4,5	1
Independence	10D6	8000	22	7S	12E	1940	3,4,5	1
Monument Peak	10D12	9000	22	7S	12E	1961	3,4,5	1
Porcupine R.S.	10C3	6500	10	4N	10E	1938	3,4	1
Timberline Creek	9D4	8850	10	8S	18E	1961	3,4,5	1
Sacajawea	10D10	6550	36	2N	6E	1960	3,4,5	1
West Rosebud	9D2	7500	10	7S	16E	1960	3,4	4
COLUMBIA RIVER BASIN								
FLATHEAD RIVER								
Desert Mountain	13A2M	5600	24	31N	19W	1956	Monthly	1
Marias Pass	13A5M	5250	34	30N	14W	1950	Monthly	1
CLARK FORK RIVER								
Georgetown Lake	13C15M	6450	6	5N	13W	1962	Monthly	1
Lubrecht Forest	13C14M	4100	11	13N	15W	1961	Monthly	8
BITTERROOT RIVER								
Gibbons Pass	13D18M	7100	4	2S	19W	1962	Monthly	1
MISSOURI RIVER BASIN								
BEAVERHEAD RIVER								
Lakeview	11E13M	6700	23	14S	2W	1962	Monthly	10
MADISON RIVER								
Red Bluff	11D4M	4800	7	3S	1E	1961	Monthly	7
GALLATIN RIVER								
College Site	11D2M	4856	18	2S	5E	1956	Monthly	1
YELLOWSTONE RIVER								
Battle Ridge	10D11M	6020	32	2N	7E	1960	Monthly	1
Northeast Entrance	10D13M	7350	33	9S	14E	1962	Monthly	6
Shields River	10C4M	5850	3	4N	10E	1960	Monthly	1

1/ Numerals 1,2,3,4,5,$\frac{5}{6}$,6 refer to January 1, February 1, March 1, April 1, May 1, May 15 and June 1.

2/ Numerals refer to Agency that secures the snow survey as follows:

1. Soil Conservation Service
2. U. S. Forest Service
3. U. S. Geological Survey
4. Montana Power Company
5. U. S. Indian Service
6. National Park Service
7. Montana Experiment Station
8. Montana State Forestry School
9. Dominion Water & Power Bureau
10. U. S. Fish and Wildlife Service

M - Soil Moisture
A - Aerial Marker

USDA-SCS-LINCOLN NEBR 1966

SOIL MOISTURE DATA

AS OF JULY 1, 1962

(Inches)

SOIL MOISTURE STATION			SOIL PROFILE		CURRENT DATA		PAST RECORD	
NO.	NAME	ELEVATION	DEPTH	FIELD CAPACITY	DATE OF SURVEY	SOIL MOISTURE	LAST YEAR	**AVERAGE
	COLUMBIA RIVER BASIN							
Flathead								
13A2M	Desert Mountain	5600	54	8.4	6/29	7.1	-	8.5
13A5M	Marias Pass	5250	54	6.5	6/25	5.2	3.4	5.1
Clark Fork								
13C15M	Georgetown Lake	6450	48	8.3	7/5	7.3	-	-
Bitterroot								
13D18M	Gibbons Pass	7100	48	7.1	6/27	6.3	-	-
	MISSOURI RIVER BASIN							
Beaverhead								
11E13M	Lakeview	6700	48	15.3	6/29	12.8	-	-
Madison								
10D4M	Red Bluff	4800	40	4.7	7/1	1.1	-	-
Gallatin								
11D2M	College Site	4856	54	14.5	6/29	10.1	6.9	9.0
Yellowstone								
10D11M	Battle Ridge	6020	48	15.4	6/29	15.6	9.9	-
10D13M	Northeast Entrance	7350	48	9.4	6/30	8.1	-	-
10C4M	Shields River	5850	48	17.8 1/	6/29	13.8	8.6	-

** Average for period of record

1/ Capacity and previously published revised data.

**AVERAGE FOR PERIOD OF RECORD

SOIL MOISTURE DATA

AS OF AUGUST 1, 1962

(Inches)

SOIL MOISTURE STATION			SOIL PROFILE		CURRENT DATA		PAST RECORD	
NO.	NAME	ELEVATION	DEPTH	FIELD CAPACITY	DATE OF SURVEY	SOIL MOISTURE	LAST YEAR	**AVERAGE
			COLUMBIA RIVER BASIN					
Flathead								
13A2M	Desert Mountain	5600	54	8.4	8/1	5.1	-	6.6
13A5M	Marias Pass	5250	54	6.5	7/27	3.6	3.0	3.8
Clark Fork								
13C15M	Georgetown Lake	6450	48	8.3	8/6	4.4	-	-
Bitterroot								
13D18M	Gibbons Pass	7100	48	7.1	7/30	5.9	-	-
			MISSOURI RIVER BASIN					
Beaverhead								
11E13M	Lakeview	6700	48	15.3	7/31	9.8	-	-
Madison								
10D4M	Red Bluff	4800	40	4.7	8/3	1.4	1.1	-
Gallatin								
11D2M	College Site	4856	54	14.5	8/3	10.0	4.9	6.9
Yellowstone								
10D11M	Battle Ridge	6020	48	15.4	7/30	10.8	7.2	-
10D13M	Northeast Entrance	7350	48	9.4	8/2	8.7	-	-
10C4M	Shields River	5850	48	17.8 1/	7/30	9.4	6.4	-

** Average for period of record.
1/ Capacity and previously published revised data.

**AVERAGE FOR PERIOD OF RECORD

SOIL MOISTURE DATA

AS OF SEPTEMBER 1, 1962

(Inches)

SOIL MOISTURE STATION			SOIL PROFILE		CURRENT DATA		PAST RECORD	
NO.	NAME	ELEVATION	DEPTH	FIELD CAPACITY	DATE OF SURVEY	SOIL MOISTURE	LAST YEAR	**AVERAGE
	COLUMBIA RIVER BASIN							
Flathead								
13A2M	Desert Mountain	5600	54	8.4	9/2	4.8	4.4	4.6
13A5M	Marias Pass	5250	54	6.5	8/25	3.2	3.0	3.7
Clark Fork								
13C15M	Georgetown Lake	6450	48	8.3	9/4	2.6	-	-
Bitterroot								
13D18M	Gibbons Pass	7100	48	7.1	8/30	5.0	-	-
	MISSOURI RIVER BASIN							
Beaverhead								
11E13M	Lakeview	6700	48	15.3	8/30	7.0	-	-
Madison								
10D4M	Red Bluff	4800	40	4.7	9/4	1.7	1.1	-
Gallatin								
11D2M	College Site	4856	54	14.5	8/31	8.5	4.0	6.0
Yellowstone								
10D11M	Battle Ridge	6020	48	15.4	8/31	8.3	5.9	-
10D13M	Northeast Entrance	7350	48	9.4	9/3	6.9	-	-
10C4M	Shields River	5850	48	17.8 1/	8/31	7.3	5.9	-

** Average for period of record
1/ Capacity and previously published revised data.

**AVERAGE FOR PERIOD OF RECORD

SOIL MOISTURE DATA

AS OF OCTOBER 1, 1962

(Inches)

SOIL MOISTURE STATION			SOIL PROFILE		CURRENT DATA		PAST RECORD	
NO.	NAME	ELEVATION	DEPTH	FIELD CAPACITY	DATE OF SURVEY	SOIL MOISTURE	LAST YEAR	**AVERAGE
			COLUMBIA RIVER BASIN					
Flathead								
13A2M	Desert Mountain	5600	54	8.4	10/1	4.0	4.9	5.7
13A5M	Marias Pass	5250	54	6.5	9/27	3.2	3.6	3.8
Clark Fork								
13C15M	Georgetown Lake	6450	48	8.3	10/1	2.3	-	-
Bitterroot								
13D18M	Gibbons Pass	7100	48	7.1	9/27	4.5	-	-
			MISSOURI RIVER BASIN					
Beaverhead								
11E13M	Lakeview	6700	48	15.3	10/2	5.8	-	-
Madison								
10D4M	Red Bluff	4800	40	4.7	10/13	1.2	3.2	-
Gallatin								
11D2M	College Site	4856	54	14.5	9/28	7.8	9.1	6.4
Yellowstone								
10D11M	Battle Ridge	6020	48	15.4	9/28	7.5	9.3	-
10D13M	Northeast Entrance	7350	48	9.4	9/29	7.5	-	-
10C4M	Shields River	5850	48	17.8 1/	9/28	7.1	7.5	-

** Average for period of record.
1/ Capacity and previously published revised data.

**AVERAGE FOR PERIOD OF RECORD

SOIL MOISTURE DATA

AS OF NOVEMBER 1, 1962

(Inches)

SOIL MOISTURE STATION			SOIL PROFILE		CURRENT DATA		PAST RECORD	
NO.	NAME	ELEVATION	DEPTH	FIELD CAPACITY	DATE OF SURVEY	SOIL MOISTURE	LAST YEAR	**AVERAGE
			COLUMBIA RIVER BASIN					
Flathead								
13A2M	Desert Mountain	5600	54	8.4	11/1	6.4	-	-
13A5M	Marias Pass	5250	54	6.5	-	-	5.1	4.7
Clark Fork								
13C15M	Georgetown Lake	6450	48	8.3	11/7	3.3	-	-
Bitterroot								
13D18M	Gibbons Pass	7100	48	7.1	10/31	6.1	-	-
			MISSOURI RIVER BASIN					
Beaverhead								
11E13M	Lakeview	6700	48	15.3	10/31	5.8	-	-
Madison								
10D4M	Red Bluff	4800	40	4.7	-	-	2.7	-
Gallatin								
11D2M	College Site	4856	54	14.5	10/26	7.8	9.6	7.4
Yellowstone								
10D11M	Battle Ridge	6020	48	15.4	10/30	13.5	12.7	-
10D13M	Northeast Entrance	7350	48	9.4	11/1	7.7	-	-
10C4M	Shields River	5850	48	17.8 1/	10/30	8.4	7.7	-

** Average for period of record.

1/ Capacity and previously published revised data.

**AVERAGE FOR PERIOD OF RECORD

SOIL MOISTURE DATA

AS OF [illegible]

(Inches)

Soil Moisture Station			Soil Moisture Data			Rain or Snow		
No.	Name	Elevation	Depth	Field Capacity	Wilting Point	Depth	Water Equiv.	**Accum.

CONTINUOUS STORE RANGE

Flagstaff

1[illegible]W	Desert Mountain	5[illegible]0	5w	8.5	8\1/2	0.4	-	-
1[illegible]W	Marias Pass	5[illegible]0	5w	8.5	-	-	3.7	4.7

Salt River

1[illegible]S	Roosevelt Lake	4[illegible]0	4s	8.2	4\1/2	3.3	-	-

Sierra Vista

1[illegible]S	Ghoree Pass	5[illegible]0	4s	7.1	10\1/2	0.1	-	-

SECONDARY AIRWAY RANGE

Bagdad

1[illegible]N	Jackview	5[illegible]0	3s	12.7	10\1/2	3.5	-	-

Black Rock

1[illegible]N	Red Butte	[illegible]	3s	1.7	-	-	0.7	-

Bullfrog

1[illegible]W	College Site	4[illegible]0	7s	1[illegible].7	1[illegible].5	7.8	4.0	0.4

Los Angeles

1[illegible]W	Batts Ridge	3[illegible]0	4s	1[illegible].4	1[illegible]/2	14.5	3[illegible].9	-
1[illegible]W	Berrenda Intersection	1[illegible]0	4s	8.[illegible]	1[illegible]/4	0.7	-	-
1[illegible]W	Kiteville Siding	4[illegible]0	4s	1[illegible].7	1[illegible]/2	[illegible]	0.7	-

* Average for period of record.
** Capacity and previously printed revision data.

**Average for period of record.

SOIL MOISTURE DATA

AS OF DECEMBER 1, 1962

(Inches)

SOIL MOISTURE STATION			SOIL PROFILE		CURRENT DATA		PAST RECORD	
NO.	NAME	ELEVATION	DEPTH	FIELD CAPACITY	DATE OF SURVEY	SOIL MOISTURE	LAST YEAR	**AVERAGE
			COLUMBIA RIVER BASIN					
Flathead								
13A2M	Desert Mountain	5600	54	8.4	-	-	-	-
13A5M	Marias Pass	5250	54	6.5	-	-	5.3	4.9
Clark Fork								
13C15M	Georgetown Lake	6450	48	8.3	12/3	3.5	-	-
Bitterroot								
13D18M	Gibbons Pass	7100	48	7.1	11/29	6.1	-	-
			MISSOURI RIVER BASIN					
Beaverhead								
11E13M	Lakeview	6700	48	15.3	11/30	5.5	-	-
Madison								
10D4M	Red Bluff	4800	40	4.7	11/24	2.1	-	-
Gallatin								
11D2M	College Site	4856	54	14.5	11/30	11.8	10.1	8.4
Yellowstone								
10D11M	Battle Ridge	6020	48	15.4	11/30	14.4	13.2	-
10D13M	Northeast Entrance	7350	48	9.4	12/1	7.5	-	-
10C4M	Shields River	5850	48	17.8 1/	11/30	8.6	11.6	-

** Average for period of record.

1/ Capacity and previously published revised data.

**AVERAGE FOR PERIOD OF RECORD

SOIL MOISTURE DATA

AS OF JANUARY 1, 1963

(Inches)

SOIL MOISTURE STATION			SOIL PROFILE		CURRENT DATA		PAST RECORD	
NO.	NAME	ELEVATION	DEPTH	FIELD CAPACITY	DATE OF SURVEY	SOIL MOISTURE	LAST YEAR	**AVERAGE
			COLUMBIA RIVER BASIN					
Flathead								
13A2M	Desert Mountain	5600	54	8.4	12/28	6.8	-	6.7
13A5M	Marias Pass	5250	54	6.5	12/30	5.5	5.6	4.7
Clark Fork								
13C15M	Georgetown Lake	6450	48	8.3	12/27	3.3	-	-
Bitterroot								
13D18M	Gibbons Pass	7100	48	7.1	12/28	5.9	-	-
			MISSOURI RIVER BASIN					
Beaverhead								
11E13M	Lakeview	6700	48	15.3	12/31	5.5	-	-
Madison								
10D4M	Red Bluff	4800	40	4.7	1/4	2.6	2.8	-
Gallatin								
11D2M	College Site	4856	54	14.5	12/28	12.3	10.7	8.3
Yellowstone								
10D11M	Battle Ridge	6020	48	15.4	12/31	13.8	13.0	-
10D13M	Northeast Entrance	7350	48	9.4	1/2	7.2	-	-
10C4M	Shields River	5850	48	17.8 1/	12/31	9.2	11.8	-

** Average for period of record.

1/ Capacity and previously published revised data.

**AVERAGE FOR PERIOD OF RECORD

SNOW SURVEY DATA

AS OF JANUARY 1, 1963

(Inches)

SNOW COURSE			CURRENT DATA			PAST RECORD	
						WATER CONTENT	
NO.	NAME	ELEVATION	DATE OF SURVEY	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE
COLUMBIA RIVER BASIN							
FLATHEAD RIVER							
13A2	Desert Mountain	5600	12/28	18	4.0	9.5	6.4*
13A5	Marias Pass	5250	1/3	23	5.8	9.9	8.1
13A13	Quintonkon	3800	1/2	7	1.8	9.4	-
13B2	Spotted Bear Mt.	7000	1/3	16	3.3	9.4	7.7*
13A12	Trout Lake	3600	1/2	12	2.8	10.4	7.7*
13B11	Twin Creeks	3580	1/2	6	1.5	8.4	5.3*
CLARK FORK RIVER							
13B10	Coyote Hill	4200	12/31	9	1.2	8.2	5.0*
15B2	Lookout	5250	12/28	33	9.0	22.9	16.4*
13C8	Lubrecht Forest #6	4040	12/31	0	0	4.4	1.5*
13C7	Storm Lake	7780	12/27	23	5.6	6.3	6.6*
13C1	Stuart Mountain	7400	12/28	26	7.4	-	-
14B1	TV Mountain	6800	12/29	18	4.0	11.3	8.3*
BITTERROOT RIVER							
13D2	Gibbons Pass	7100	12/28	30	8.1	11.0	12.7*

NOTE: ALL AVERAGES BASED ON 1943-1957 (15 YEAR PERIOD). *ADJUSTED AVERAGE

SNOW SURVEY DATA

AS OF JANUARY 1, 1963

(inches)

SNOW COURSE			CURRENT DATA			PAST RECORD	
						WATER CONTENT	
NO.	NAME	ELEVATION	DATE OF SURVEY	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE
	MISSOURI RIVER BASIN						
BEAVERHEAD RIVER							
12E3	Camp Creek	6800	12/28	11	2.2	5.0	4.2*
11E12	Kilgore	6200	12/28	9	2.1	6.1	4.6*
JEFFERSON RIVER							
12D1	Pipestone Pass	7200	12/28	13	3.0	2.8	2.7*
MADISON RIVER							
11E9	Big Springs	6500	12/30	15	3.2	13.5	8.2
11E5	Hebgen Dam	6550	1/2	11	2.2	5.6	5.9
11E10	Island Park	6315	12/30	14	3.0	10.2	6.3
10E2	Norris Basin	7500	1/2	15	3.1	5.4	4.6*
11E8	Valley View	6500	12/30	21	4.7	9.0	5.8
11E7	West Yellowstone	6700	1/2	12	2.3	6.2	5.7
GALLATIN RIVER							
11E6	Twenty-One Mile	7150	1/2	17	3.6	10.3	8.6
MISSOURI MAIN STEM							
12C5	Chessman Reservoir	6200	1/4	3	0.5	1.9	2.2
12C2	Tenmile, Lower	6250	1/4	8	1.9	3.7	3.5
12C3	Tenmile, Middle	6800	1/3	15	3.4	5.4	5.3
12C4	Tenmile, Upper	8000	1/3	17	4.4	6.8	6.7
UPPER YELLOWSTONE RIVER							
10E3	Canyon	7750	1/3	20	4.3	8.6	6.3*
10D7	Cooke City	7400	1/2	14	3.0	4.8	4.0*
10E6	East Entrance	7000	12/31	16	2.5	6.0	4.7*
9D5	Grizzly Peak	8400	12/28	26	6.0	15.0	-
10E4	Lake Camp #2	7850	12/31	12	2.0	5.8	4.5*
10E1	Lupine Creek	7300	1/2	17	3.0	8.1	5.1*
10E5	Sylvan Pass	7100	12/31	18	3.9	7.5	6.5*
10E7	Thumb Divide	7900	12/31	25	6.6	14.7	10.2*

NOTE: ALL AVERAGES BASED ON 1943-1957 (15 YEAR PERIOD). *ADJUSTED AVERAGE

SNOW SURVEY DATA

as of January 1, 1963

Snow Course			Latest Survey Data			Last Survey	
No.	Name	Elevation	Date of Survey	Snow Depth	Water Content	Water Content	Last Year's Average

MISCELLANEOUS RIVERS BASINS

SACRAMENTO RIVER

1[illegible]	Deer Creek	6800	12/28	11	2.8	7.0	4.2*
1[illegible]A	Highway	4000	12/28	9	2.1	6.1	4.5*

SACRAMENTO RIVER

1[illegible]	Pleasants Peak	7200	12/28	13	3.6	4.8	3.7*

MERCED RIVER

1[illegible]	Big Meadows	6500	12/30	15	3.2	12.5	8.2
1[illegible]	Harden Gap	6350	1/2	11	1.2	8.2	5.8
1[illegible]	Ta'ma Peak	6210	12/20	14	3.0	10.8	6.[illegible]
1[illegible]	Morris Basin	7300	1/2	15	3.1	5.4	4.[illegible]
1[illegible]	Valley View	6300	12/30	21	4.7	2.0	2.2
1[illegible]	West Yellowstone	6700	1/2	12	2.3	6.8	3.7

CHALFANT RIVER

1[illegible]	Twenty-One Mile	7150	1/2	17	3.4	10.2	[illegible]

SAN JOAQUIN RIVER

1[illegible]	Chamberlain Meadows	5200	1/4	3	0.3	.3	[illegible]
1[illegible]	Tamarack Summit	6250	1/4	8	1.7	3.7	3.[illegible]
1[illegible]	Tamarack Middle	6050	1/4	16	3.1	3.4	3.[illegible]
1[illegible]	Tamarack Upper	8300	1/3	27	1.4	6.0	[illegible]

TRUCKEE, TRUKEE-TOWER RIVERS

1[illegible]	Donner	7250	1/3	30	4.7	7.6	4.[illegible]
1[illegible]	Cisco Grove	7200	1/2	14	3.0	4.8	4.[illegible]
1[illegible]	Sand Harbor	7000	12/[illegible]	16	2.9	6.0	[illegible]
1[illegible]	Ortaly Peak	8400	12/28	34	6.0	4.0	[illegible]
1[illegible]	Lake Camp #1	7400	12/31	12	2.0	3.4	4.3*
1[illegible]	Tahoe Cross	7300	1/2	17	1.8	8.1	5.1*
1[illegible]	Squaw Pass	7100	1/1	18	3.9	7.8	5.4*
1[illegible]	Tunnel Bridge	7000	12/31	23	4.6	14.7	10.8*

* Not in same stand as comparable sur vey for any year. "Adjusted average

RESERVOIR STORAGE DATA

AS OF DECEMBER 31, 1962

(1000 Acre Feet)

BASIN	RESERVOIR	USEABLE CAPACITY	USEABLE STORAGE THIS YEAR	USEABLE STORAGE LAST YEAR	USEABLE STORAGE AVERAGE
COLUMBIA RIVER BASIN					
Flathead	Hungry Horse	3,428.0	3,155.0	2,992.0	2,883.0**
	Flathead Lake	1,791.0	1,610.0	1,367.0	1,257.1
	Camas 1/	45.2	24.8	25.4	23.8
	Mission Valley 2/	100.3	25.1	20.8	28.2
Clark Fork	Georgetown Lake	31.0	27.7	26.0	25.3
	Noxon	334.6	331.3	325.0	-
Bitterroot	Como	34.9	15.0	-	9.3
MISSOURI RIVER BASIN					
Beaverhead	Lima	84.0	N.R.	-	32.4
Ruby	Ruby	38.8	N.R.	16.2	22.7**
Madison	Hebgen Lake 3/	384.8	233.6	106.8	240.3
	Ennis Lake	41.0	39.4	39.3	37.6
Gallatin	Middle Creek	8.0	4.1	2.0	3.1**
Missouri	Canyon Ferry	2,043.0	2,015.0	1,382.0	1,682.0**
	Hauser & Helena	61.9	53.6	52.0	54.9
	Lake Helena	10.4	7.6	7.0	8.3**
	Holter Lake	81.9	73.0	67.1	71.6
	Smith River	10.7	7.3	1.6	5.0**
	Ackley Lake	5.8	N.R.	1.6	3.9
	Durand	7.0	5.3	0.8	4.3
	Martinsdale	23.1	8.9	1.3	9.5
	Deadman's Basin	72.2	42.1	4.8	48.5**
	Fort Peck	19,410.0	10,040.0	8,820.0	11,061.0
Sun-Teton	Gibson	105.0	33.6	34.0	55.5
	Willow Creek	32.3	25.5	10.3	18.4
	Pishkun	32.0	18.5	17.4	19.0
Marias	Lower Two Medicine	16.6	N.R.	0	0
	Four Horns	19.2	N.R.	14.0	8.6
	Swift	30.0	8.6	13.5	18.1
	Lake Francis	112.0	65.9	74.8	94.4
	Tiber	1,313.0	625.5	619.0	626.2**
Milk	Fresno	127.2	36.1	15.9	66.6
	Nelson	66.8	48.3	16.8	37.2
	Lake Sherburne	66.1	N.R.	13.0	16.3
Yellowstone	Mystic Lake	20.8	14.7	13.4	14.5
	Tongue River	68.0	N.R.	39.9	7.9
	Cooney	27.5	15.0	15.0	8.8

1/ Sum of four small reservoirs on west side of Flathead Lake.
2/ Sum of eight small reservoirs in Mission Valley not including Jocko Lake.
3/ New capacity curve.

NOTE: ALL AVERAGES BASED ON 1943-1957 (15 YEAR PERIOD). **AVERAGE FOR PERIOD OF RECORD

Agencies Cooperating in Collecting Data Contained in this Bulletin

U. S. Forest Service
Region I, Missoula, Montana

U. S. Geological Survey
Helena, Montana

U. S. Army Corps of Engineers
Portland, Oregon
Seattle, Washington
Omaha, Nebraska
Riverdale, N. D.

U. S. Indian Irrigation Service
St. Ignatius, Montana

U. S. Weather Bureau
Helena, Montana

U. S. Fish & Wildlife Service
Red Rock Lakes Refuge
Monida, Montana

U. S. Bureau of Reclamation
Billings, Montana
Boise, Idaho

Montana Power Company
Butte, Montana

Agricultural Experiment Station
North Montana Branch Station
Havre, Montana

State Water Conservation Board
Helena, Montana

National Park Service
Yellowstone National Park
Glacier National Park

Montana Experiment Station
Montana State College
Bozeman, Montana

Bonneville Power Administration
Portland, Oregon

Montana State School of Forestry
Montana State University
Missoula, Montana

Soil Conservation Service
Montana, Wyoming, Idaho

Soil Conservation Districts
Montana Counties

Johnson Flying Service, Inc.
Missoula, Montana

Water Rights Branch
Dept. of Lands & Forests
Victoria, British Columbia

Department of Northern Affairs
& National Resources
Calgary, Alberta

State Engineer
Montana and Wyoming

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
P.O. BOX 855
BOZEMAN, MONTANA

POSTAGE AND FEES PAID
U. S. DEPARTMENT OF AGRICULTURE

First Class Mail

FEDERAL - STATE - PRIVATE

COOPERATIVE SNOW SURVEYS

Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"The Conservation of Water begins with the Snow Survey"